project WEB

spring 2003

Connecting Projects WILD, WET and Learning Tree in New Hampshire

What Do You Want to Be When You Grow Up?

What options were you given for career choices when you were in school? For many of us, the options were limited and simplified. Doctor. Lawyer. Teacher. Dentist. Social Worker. All reputable occupations, but without information about all of the different types of doctors, lawyers or teachers out there, it's hard to decide if you really want to go into a particular field. For example, someone who goes to law school may not necessarily defend clients in a courtroom. There are many, many other careers that a person with a law degree is qualified to pursue.

The same is true for environmental careers. A wide array of opportunities exists for someone who is interested in pursuing an environment-related career. In this issue, we have decided to share some of these possibilities with you, so that you are better equipped to inform your students of the many options available to them. Despite the many different fields that one may choose to enter, there are common threads that tie people who pursue environmental careers together: they are committed to positively impacting the quality of our environment, and they thoroughly enjoy their work. WEB

Though I will never get rich as an environmental educator, my life has been enriched by the experience and I know I have made a difference in the lives of others.

—Ruth Smith
Audubon Society
of N.H.

Meet Some New Hampshire Environmental Professionals

We recently talked to twelve people who work in a variety of environmental professions in New Hampshire. We include highlights from these interviews to help give you a feel for what it would be like to have a job like theirs.

Photo © SPNHF staff

Dave Anderson helps a group of Forest Society members identify scat on a conservation lands tour.

Dave Anderson
Director of Education
Society for the Protection of N.H. Forests

What do you like most about your job?

The very best part of my job is teaching natural history topics in outdoor field trip settings. It's particularly gratifying to design outreach programs that directly contribute to the success of land conservation, public policy and increased public understanding of forest stewardship issues.

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What kind of educational and experiential background is required for your job?

My background includes training in natural sciences and environmental biology. Public relations skills, public speaking skills, a sense of humor, listening skills, respect for others, reverence for nature and a desire to make a difference are important qualities. Never underestimate the importance of time spent in the field and the wisdom of local culture!

Kristine Bontaites
Wildlife Biologist
N.H. Fish and Game Department

How can a person in your position make a positive impact on the environment?

The most important part of my job is educating people. People need to know what wildlife is and what it needs to survive. Many people don't understand that their actions, such as building houses, affect wildlife.

Above: Kristine Bontaites gathers data on a bull moose. Right: Jim Kneeland, FISH AND GAME Conservation Officer, pauses for a photo.

What advice would you give to individuals interested in a career path such as yours?

Someone entering the field now needs a master's degree in wildlife management. They should be comfortable dealing with people. A background in forestry is also beneficial, because the biggest challenge facing wildlife is habitat degradation. Familiarity with GIS (Geographic Information System) technology and a strong statistics background are also important.

Photo © C. Alness aka ART

Inge Seaboyer uses an increment borer to estimate the age of a tree.

Inge Seaboyer
Forester
N.H. Division of Forests and Lands

What's a typical day on the job like for you?

If I'm in the field, I could be doing a Forest Resource Inventory, scouting for a wildlife habitat improvement project, laying out a project area, marking timber or administering a timber sale or a noncommercial project. An office day can entail compiling inventory data, drafting stand type maps, working on management plans or project planning, or responding to public queries about state land management.

What advice would you give to individuals interested in a career path such as yours?

Go out and job shadow a field forester, and not necessarily on a beautiful sunny day! In a field position you have to be willing to deal with rain, snow, dirt, bugs, extreme cold, heat and humidity, etc., and bushwhacking though some pretty nasty stuff. It's not like hiking on a trail! Also, if you want to work on public lands, you have to be willing and able to deal with the public. Strong writing and speaking skills are a great asset.

Jim Kneeland
Conservation Officer
N.H. Fish and Game Department

What's a typical day on the job like for you?

My work changes seasonally. In the winter, I check snowmobile registrations and ice fishing licenses. In the spring, I spend a lot of time stocking fish and checking fishing licenses. During the summer, I check ATV registrations and fishing licenses, and, in the fall, I spend time checking hunters and registering bears. I also participate in search and rescues when needed.

Is there anything else you would like to share about your job?

I have the best job in the world! I work outdoors and have the freedom to do my job on my own.

Andrea LaMoreaux
Limnologist
N.H. Department of Environmental Services

What's a typical day on the job like for you?

Photo © John Alger, volunteer monitor

Andrea LaMoreaux uses a secchi-disk to measure the clarity of Loon Lake in Plymouth, N.H.

In the summer, I collect water quality samples at lakes and ponds throughout the state and analyze the samples in the laboratory. In the fall, I analyze the water quality data collected during the summer. In the winter, I write water quality reports for each of the lakes and ponds that we collect water samples from. In the spring, I publish an annual newsletter, conduct educational programs at schools and provide training workshops for our volunteer lake monitors.

What advice would you give to individuals interested in a career path such as yours?

The environmental field is very diverse. Participate in a variety of internships before you decide what discipline you want to specialize in. If possible, try to intern with a state agency, a nonprofit group and an environmental consulting firm. While each of these types of organizations plays an important part in managing and protecting the environment, their roles can be very different.

Photo © Joseph Ayotte, USGS

Photo © Manchester Water Works Staff

Above right: Tom Mack collects geophysical measurements of ground conductivity to map groundwater quality in a wetland. Right: Cheryl Wood peeks out from behind a flask as she analyzes drinking water samples at the Manchester Water Treatment Plant.

Thomas Mack
Ground Water Specialist
United States Geological Survey

What's a typical day on the job like for you?

A day in the field may involve collecting measurements of rock characteristics hundreds of feet in the earth at a well, or collecting geophysical measurements from a boat on a lake or river on a beautiful fall day. I also analyze hydrologic data, write reports and create computer simulations of groundwater flow. That means a lot of time spent at a computer, organizing data sets, making statistical analyses and creating graphs or plots to illustrate the results.

What do you like most about your job?

I like the variety that is inherent in my job. I get to apply a variety of techniques, from geophysical surveys to water level and stream flow measurements. In hydrologic investigations, as with most environmental studies, you use a variety of disciplines, such as chemistry, physics or biology, to help get at the answers to scientific questions or problems.

Cheryl Wood
Laboratory Manager
Manchester Water Works

What's a typical day on the job like for you?

A typical day in the laboratory involves collecting and analyzing water samples from various sites within the treatment plant, doing routine calibrations on equipment, and making sure that all Quality Assurance/Quality Control measures are adhered to. I am also

PROFESSIONALS *continued on page 4*

Know Any Students Interested in Environmental Careers?

Environmental Bachelor's Degrees from N.H. Colleges and Universities

Many people prepare for an environmental career by majoring in a related field. The following list identifies colleges and universities in New Hampshire that offer environmentally related Bachelor's degrees.

Colby Sawyer College, New London
Community & Environmental Studies

Dartmouth College, Hanover
Ecology & Evolutionary Biology
Environmental Engineering
Environmental Studies

Franklin Pierce College, Rindge
Environmental Science

Keene State College, Keene
Environmental Studies
Environmental Policy
Environmental Science

New England College, Henniker
Environmental Chemistry
Environmental Science
Environmental Studies

Plymouth State College, Plymouth
Environmental Biology
Environmental Planning

St. Anselm College, Manchester
Environmental Science

University of New Hampshire
Ecology & Evolutionary Biology
Environmental Chemistry
Environmental Conservation
Environmental Engineering
Environmental Horticulture
Environmental & Resource Economics
Forestry
Marine & Freshwater Biology
Soil Science
Water Resources Management
Wildlife Management

Calendar

June 7 – Ninth Annual Big Splash River and Music Festival at Wilder Picnic Area, Wilder, VT. www.ctriverfest.org

June 28 - July 13 – Great North American Secchi Dip-In. dipin.kent.edu

July 15 – Project Learning Tree professional development workshop, 8:30 a.m. – 3 p.m. at the Rocks Estate in Bethlehem, N.H. (603) 226-0160 or info@nhplt.org.

July 22 – Project Learning Tree professional development workshop, 8:30 a.m. – 3 p.m. at Fox Forest in Hillsborough, N.H. (603) 226-0160 or info@nhplt.org.

July 31 – Project Learning Tree development workshop, 8:30 a.m. – 3 p.m. at Coe Brown Academy in Northwood, N.H. (603) 226-0160 or info@nhplt.org.

September 19-21 – New England Environmental Education Alliance Conference in Woodstock, CT. www.neeea.org

September 20 – Annual Coastal Cleanup. Contact Verna DeLauer, (603) 271-2155 or vdelauer@osp.state.nh.us

September 26 – Make a Splash with Project WET Festival. Contact Nicole Clegg, (603) 271-4071 or nclegg@des.state.nh.us.

September 27 – National Estuaries Day. Visit estuaries.gov or www.state.nh.us/nhep.

October 18 – N.H. Estuaries Expo at the Urban Forestry Center in Portsmouth. www.state.nh.us/nhep

PROFESSIONALS *continued from page 3*

responsible for administrative tasks such as staff scheduling and placing orders. In the spring, I work with our Youth Education Program. Through this program, we teach 4th and 5th grade students about what we do to provide them with clean drinking water.

How can a person in your position make a positive impact on the environment?

By monitoring our watershed for various contaminants, I help detect environmental stressors that could impact the quality of the water supply. Early detection can help us correct the problem before it impacts the environment. With the Youth Education program, we help to increase the environmental knowledge of students. We hope to make a positive impact on the environment by encouraging children to protect and conserve their water for their future.

Wayne Paschal
Fish Hatchery Superintendent
N.H. Fish and Game Department

Wayne Paschal gathers a fry sample.

How can a person in your position make a positive impact on the environment?

We do the best we can to have healthy fish to release into the state's streams, ponds and lakes. We work with a fish biologist to ensure we're meeting the needs of fish raised in the hatchery, including factors of water flow, temperature and fish densities. Stocked fish provide recreational fishing opportunities in areas that often do not have good habitat for fish reproduction. We also raise fish for fish restoration programs, such as the salmon program.

What do you like most about your job? What, if anything, do you like least?

I enjoy working outdoors in a job that isn't routine and that gives me the chance to work with fish and wildlife. Though the pay isn't great, there are different things to do every day.

Richard Pendleton
President
Eastview Environmental Consulting and Field Services

What's a typical day on the job like for you?

About two-thirds of my time is spent working at the computer on technical reports, accounting, and keeping up with changes in the field by reading journals,

Photo © Junie Esslinger

Richard Pendleton supervises the drilling and installation of environmental monitoring wells.

talking to other consultants and reviewing regulatory information. The rest of my time is spent doing field work, which involves walking sites to look for environmental issues, sampling groundwater, soils and surface water, performing surveys, making site maps, interviewing municipal officials, owners and managers and doing regulatory reviews.

What do you like most about your job?

I love the fact that I work for myself and have the freedom to choose my work and how my days are structured. I enjoy helping people put their properties to good use and giving them more information about their environment and potential environmental issues. Explaining the findings of a project at a public meeting can be exciting and stimulating.

Dr. Len Reitsma
Associate Professor
Plymouth State College

How can a person in your position make a positive impact on the environment?

Teaching is one of the very best mediums for creating awareness and for providing students with the knowledge and skills needed to assert claims about environmental issues. Additionally, basic research is a critical component to understanding the environment and how it functions. Without the work of scientists, we would not know nearly as much about the mechanisms of nature.

Photo © Plymouth State College

Len Reitsma works with a Tropical Field Biology student in Puerto Rico.

What kind of educational and experiential background is required for your job?

I don't think it would be easy to be a professor at very many institutions without a Ph.D. My graduate work prepared me well for all the aspects of my career. I would emphasize, though, that Ph.Ds are not reserved for the very smartest people. I am not among the very smartest, but I have perseverance and love to work hard. And I love to work with people. The other quality I have always had is that I am a curious individual and like to learn new things.

Pam Riel
Publication Manager
N.H. Fish and Game Department

What do you like most about your job? What, if anything, do you like least?

I like working with wildlife as a subject matter. I can be creative in many aspects of my work, and I have lots of flexibility in designing publications. I like seeing something go from the initial idea to the final printed product. What I like least about the job is the paperwork and budget details.

What advice would you give to individuals interested in a career path such as yours?

Photo © Silk Farm Audubon Staff

Above: Ruth Smith teaches a group of young nature center visitors about vernal pools. Above left: These days Pam Riel does her creative work on computer.

Have a strong foundation in art before jumping into computer graphics work. Once you have the art background, then you can learn the technology aspect of it. It is definitely helpful to have an interest in the natural world and wildlife.

Ruth Smith
Program Director
Silk Farm Audubon Center

What do you like most about your job? What, if anything, do you like least?

What other kind of work could I do where I get to sing and play my guitar, spend a day knee-deep in a pond looking for frogs and insects, do wolf howls with a group of teachers, discover a salamander under a log with some preschoolers and meet some incredible people who want to make the world a better place? It is amazing work. I am thankful to have a job that I love, and though I will never get rich as an environmental educator, my life has been enriched by the experience, and I know I have made a difference in the lives of others.

What advice would you give to individuals interested in a career path such as yours?

Anyone interested in an environmental education career should get involved in a nature center or other organization that does this type of work. Get your feet wet and try things out. Volunteer, do an internship or get a summer job to gain experience. It will help you decide if it is something you really like, and it will also give you experience and connections that will be helpful in finding longer-term work. WEB

ANNOUNCEMENTS/RESOURCES

N.H. Forests Forever CD-ROM and Instructional Guide Available

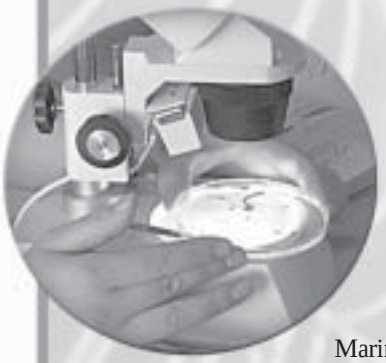
A new interactive CD-ROM titled *N.H. Forests Forever* is designed to teach middle school students about use and management of the forests in our state. This CD is available free of charge to N.H. teachers, thanks to the combined efforts of N.H. Project Learning Tree, the New Hampshire Fish and Game Department, UNH Cooperative Extension and the N.H. Timberland Owners Association. To obtain a free copy of the CD-ROM and Instructional Guide, contact the N.H. Fish and Game Department at (603) 271-3211.

Get in Touch with Your Local Landowner or Resource Professional

N.H. Project Learning Tree has put together a contact list of over 90 tree farmers and professional foresters from all parts of the state who have expressed an interest in helping their local schools by hosting, leading or assisting with outdoor forest field trips. If you would like to receive a copy of this list, contact N.H. Project Learning Tree at 1(800) 677-1499 or e-mail info@nhplt.org.

"I'd Like to Be a ..."

The variety of environment-related careers isn't limited to the examples we've chosen to include in this newsletter. The list below provides several more examples of environmental career opportunities that students can pursue.



Agricultural Scientist
Air/Water Quality Manager
Biochemist
Biologist
Chemist
Civil Engineer
Conservation Officer
Earth Scientist
Ecologist
Environmental Educator
Environmental Engineer
Environmental Lawyer
Environmental Lobbyist
Environmental Writer
Fisheries Biologist
Fishing/Hunting Guide
Forest/Park Ranger
Forester
Geographer
Geologist
Geophysicist
Hazardous Waste Manager
Hydrologist
Marine Biologist
Meteorologist
Microbiologist
Natural Resources Specialist
Naturalist
Oceanographer
Outdoor/Adventure Trip Leader
Photographer
Recycling Coordinator
Resource Economist
Seismologist
Soil Scientist
Teacher/Professor
Urban and Regional Planner
Water Treatment Plant Operator
Wastewater Treatment Plant Operator
Watershed Manager
Wildlife Manager
Zoologist

ON THE H.O.M.E. FRONT

The Art of a Conservation Career

Combining Humanities and Science to Work for the Environment

BY MARILYN WYZGA

Taking students outdoors to explore the schoolyard can be a great way to spark the interest of future environmentalists in your class. Keep in mind that you don't need to be a scientist to introduce your students to the outdoors. You can cultivate their interest from your own appreciation for nature, adding the textures of your particular set of skills. All it takes is time and a curiosity about what lives in your natural neighborhood, plus a healthy set of observation skills, which you can teach them to build. One of your students – or many! – may ultimately pursue a career that is literally "in the field."

Most people who work in the environmental field explored the outdoors at an early age. My parents drove the seven of us out of New Jersey each summer, with a Coleman stove and a canvas tent, to experience the wilds of New England in the region's state parks. My mother was a science teacher, my father an engineer and amateur photographer. It wasn't unusual to find them clinging to the edge of a cliff, my mom trying to identify that flower out there, and my dad photographing her. Science was at the heart of what they did for work, but I was driven by art and literature.

A degree in literature, art or humanities can offer a surprising number of opportunities for working in the environmental field. Cultivating your interests and continuing your education often can lead to a position in which you can grow and train. I lived in the Ecology House on my college campus and spent summers camping and backpacking. My first job out of school, for Massachusetts Audubon's Wildwood Nature Camp, bore the hefty title of "teacher-counselor/naturalist in art, music, dance and drama."

Like others in this field, I had learned a great deal through my own explorations and experience that I could share with the public. As a theater hound, I was delighted to discover that drama provides an excellent vehicle for teaching about nature, whether it is performing as a character for the audience or involving the audience in a performance. Public speaking is a significant part of an environmental educator's job; it helped to have a background in acting. A talent for visual arts can lead to learning about plants through drawing, painting and writing in a field journal. Art skills also can be channeled into the design of exhibits and publications. My own design experience, creating theater sets for the stage, was readily transferable to interpretive exhibits and now is being applied to landscape design. Then, additional academic training backed up these skills and interests.

How does one get started in a conservation career? You might begin in the field by working with a nature center or as a volunteer. There are plenty of opportunities for additional training, both "a la carte" and by degree. Several New Hampshire institutions offer masters programs in environmental studies. To supplement my own ongoing education, I've taken various native plant horticulture, propagation and ecology classes through the New England Wild Flower Society. You or your students may want to pursue the New Hampshire Technical Institute's certificate program in Landscape Design. Helen Ross Russell talks in her book, *Ten Minute Field Trips*, about learning with your students. If they have interests, look things up together. This teaches them the skills of where to find the scientific information, and teaches you both about the natural history of your place.

What other career opportunities in the environmental education field don't require a science degree? At N. H. Fish and Game, I work with two graphic designers to develop exhibits, displays and brochures. One is a self-taught wildlife artist. Both are passionate about wildlife and the outdoors. Our public relations specialists combine their backgrounds in communications and literature with an interest in wildlife and conservation. A team of videographers focuses their fascination with wildlife through the lens of a camera.

Of course, it takes more to become an environmental educator than a concern for the planet and a love of working with people. Our job is to provide global citizenry with a key survival skill: environmental literacy. Doing this effectively means knowing both the big picture – the concepts, themes and systems that hold our world together – and delving into the details of identification, behaviors and needs of the individual species occupying this planet. That's where schoolyard habitat study comes in. By introducing students to the plants and animals of their neighborhood, you prepare the ground on which they may one day build an exciting environmental career.

Videographers have an interesting career that incorporates outdoor activities with high-tech cameras and computer imaging.

Activities Related to Articles in This Issue

Project Learning Tree suggests:

Students learn about a variety of forest-related careers—from foresters and loggers to scientists and naturalists—in *Who Works in This Forest?*

In *People, Places, Things,* students explore the job opportunities in their own community, and learn how the community's well-being depends on the work of many different people.

Students get a sneak peak into the job responsibilities of a Natural Resources Conservation Service employee in *Soil Stories*.

Project WET suggests:

By sequencing the *Wet-Work Shuffle* water resource occupation cards, students learn about different careers involved in bringing water from its source, to homes, and back again.

In *The Price is Right,* students become urban planners as they calculate and weigh the economic and environmental costs of building a water development project.

Students act as consultants helping the City of Beavertown address the problems of increased demand on their wastewater treatment plant during the *Super Bowl Surge*.

Project WILD suggests:

In *Polar Bears in Phoenix* students design and draw a zoo enclosure appropriate for the survival of a polar bear in a hot, arid climate.

Students evaluate different types of wildlife research, apply their results to develop appropriate individual proposals and conduct research in *Wildlife Research*.

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